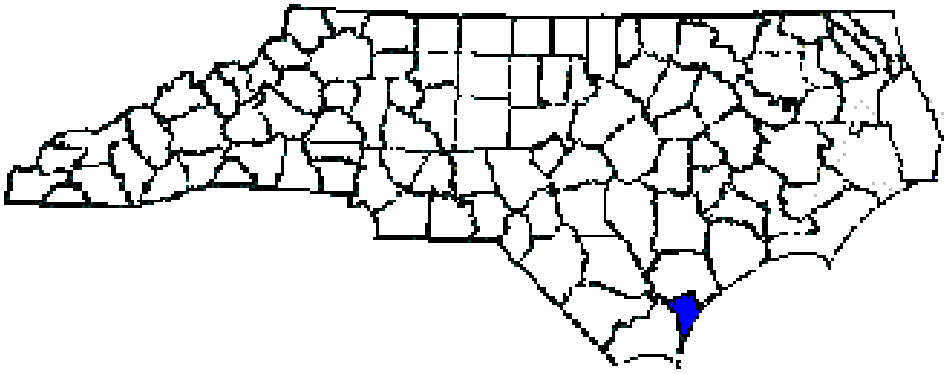
ANNUAL REPORT FOR 2010



Third Street Bridge Mitigation Site
New Hanover County
TIP No. U-0092A

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TABLE OF CONTENTS

SUMMARY 1

1.0 INTRODUCTION 2
- 1.1 PROJECT DESCRIPTION 2
- 1.2 PURPOSE 2
- 1.3 PROJECT HISTORY 2
- 1.4 DEBIT LEDGER 2

2.0 VEGETATOPM 4
- 2.1 SUCCESS CRITERIA 4
- 2.2 DESCRIPTION OF PLANTED AREAS 4
- 2.3 RESULTS OF VEGETATION MONITORING 5
- 2.4 CONCLUSIONS 5

3.0 OVERALL CONCLUSIONS/RECOMMENDATIONS 6

LIST OF FIGURES

Figure 1. Site Location Map 3

APPENDICES

Appendix A Photo and Vegetation Plot Locations, Site Photos

SUMMARY

The following report summarizes the monitoring activities that have occurred in 2010 at the Third Street Bridge Mitigation Site. The 2010-year represents the fifth year of vegetation monitoring following construction. The site must demonstrate hydrologic and vegetation success for a minimum of five years or until the site is deemed successful. The site was constructed to serve as mitigation for impacts associated with the construction of T.I.P. U-0092A for the Smith Creek Parkway in New Hanover County.

A site visit was held on April 29, 2009 with the regulatory agencies to address continued problems with the planted shrub vegetation and the success of the hydrologic monitoring. Based on that meeting, it was agreed that NCDOT would continue vegetation monitoring of the site through the five year monitoring period and hydrologic monitoring could be discontinued. The groundwater gauges and surface water gauge have been removed and hydrologic monitoring is not included in the 2010 monitoring report.

The vegetation is separated into two different planting zones at the site. The two planting zones included the bottomland hardwood area, which is located in between the bridges and the scrub-shrub area, which is located immediately under the Third Street Bridge. The 2010 vegetation monitoring in the bottomland hardwood area yielded 497 trees per acre; with total density of trees/shrubs yielding 248 trees per acre which is below the minimum success criteria of 260 trees per acre. The shrub area however, has demonstrated limited success of planted species. There is some natural regeneration of adjacent shrub species that has occurred, but very little of the planted vegetation is still surviving. NCDOT has investigated, in detail, the shrub area to determine possible explanations for the limited vegetation success. These explanations are further discussed in the vegetation section of the report. NCDOT proposes to discontinue monitoring the planted vegetation and proposes to address any permit deficiencies at the end of the five-year monitoring period.

1.0 INTRODUCTION

1.1 Project Description

The Third Street Bridge Mitigation Site is located in New Hanover County adjacent to the Smith Creek Parkway. Totaling 1.3 acres in size, the site provides bottomland-hardwood creation mitigation for a portion of the wetland impacts associated with U-0092A.

1.2 Purpose

In order to demonstrate successful mitigation, hydrologic and vegetation monitoring must be conducted for a minimum of five years or until the site is deemed successful. Hydrologic success criteria is based on the approved mitigation plan and require that the site demonstrate inundation or saturation within 12" of the surface for 12.5% of the growing season. Vegetation success criteria states that at least 320 trees/shrubs per acre must survive after the completion of the third growing season and 260 trees/shrubs per acre after the fifth growing season. Included in this report are analyses of the vegetation monitoring results and site photographs.

1.3 Project History

Spring 2006	Site Constructed
February 2006	Site Planted
May 2006	Monitoring Gauges Installed
May-November 2006	Hydrologic Monitoring (Year 1)
June 2006	Vegetation Monitoring (Year 1)
May-November 2007	Hydrologic Monitoring (Year 2)
July 2007	Vegetation Monitoring (Year 2)
July 2007	Soil Samples Collected in Shrub Area
November 2007	Site visit to investigate Shrub Area
May-November 2008	Hydrologic Monitoring (Year 3)
September 2008	Vegetation Monitoring (Year 3)
April 29, 2009	Site Visit with Resource Agencies
July 2009	Vegetation Monitoring (Year 4)
August 2010	Vegetation Monitoring (Year 5)

1.4 Debit Ledger

The entire Third Street Bridge mitigation site was used for the U-0092A project to compensate for unavoidable wetland impacts.

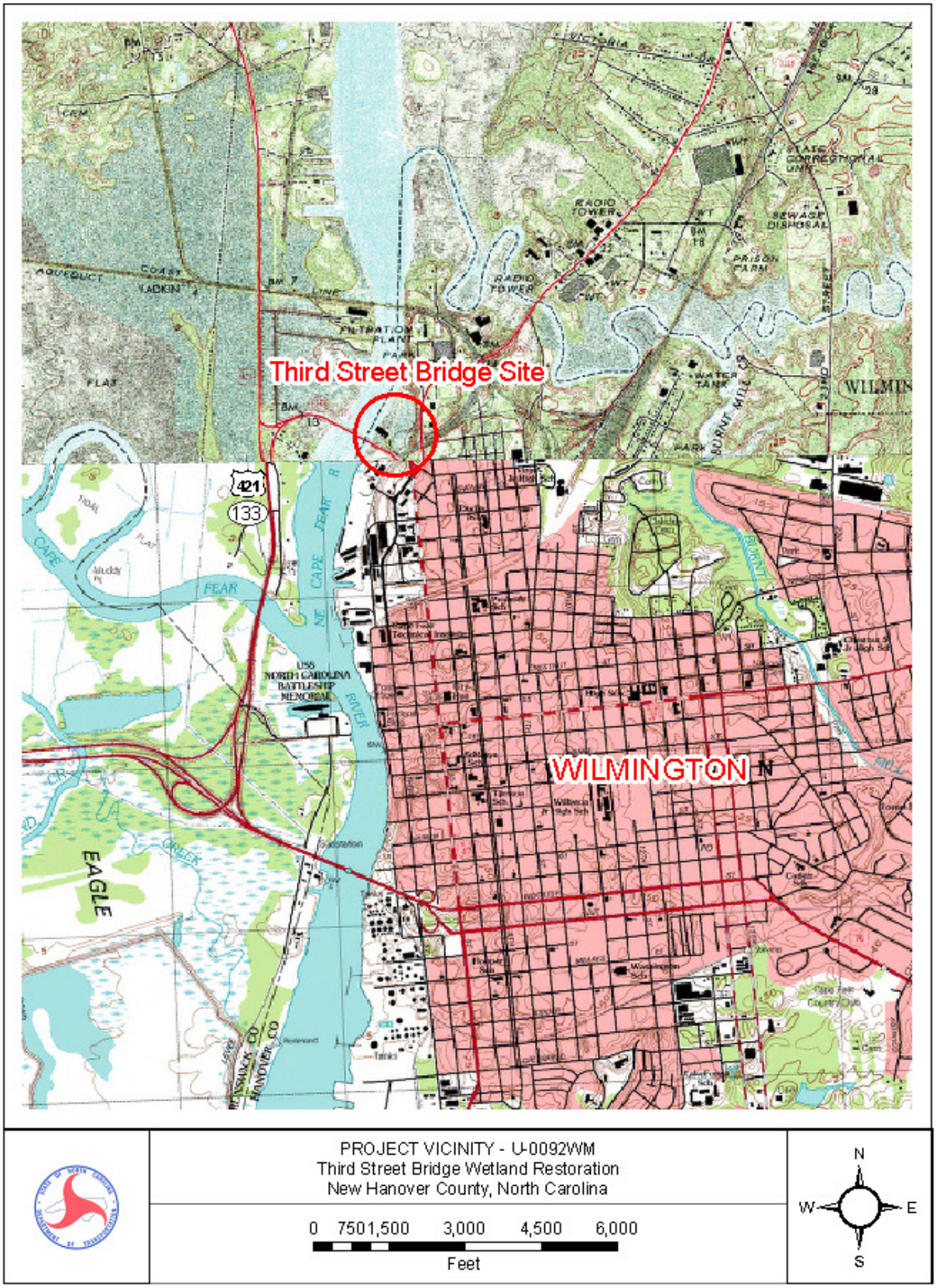


Figure 1. Site Location Map

2.0 VEGETATION: THIRD STREET BRIDGE MITIGATION SITE (YEAR 5 MONITORING)

2.1 Success Criteria

The Vegetation Success Criteria states that at least 320 trees/shrubs per acre must survive after the completion of the third growing season and 260 trees/shrubs per acre after the fifth growing season.

2.2 Description of Species

The following tree and shrub species were planted in the Wetland Restoration Area:

Tree Area:

Fraxinus pennsylvanica, Green Ash

Taxodium distichum, Baldcypress

Quercus lyrata, Overcup Oak

Nyssa aquatica, Water Tupelo

Nyssa sylvatica var. *biflora*, Swamp Blackgum

Shrub Area:

Cephalanthus occidentalis, Buttonbush

Aronia arbutifolia, Red Chokeberry

Alnus serrulata, Tag Alder

Itea virginica, Virginia Sweetspire

2.3 Results of Vegetation Monitoring

Table 1. Vegetation Monitoring Results

Plot #	Green Ash	Baldcypress	Swamp Blackgum	Water Tupelo	Overcup Oak	Buttonbush	Red Chokeberry	Tag Alder	Virginia Willow	Total (5 year)	Total (at planting)	Density (Trees/Acre
1 (Trees)	20	10	4	3	1					38	52	497
2 (Shrubs)										0	45	0
Average Density (Trees & Shrubs/Acre)												248

Site Notes: Other species noted: cattail, vines, *Juncus* sp., phragmites, black willow, baccharis, S*cripus* sp., *Pluchea* sp., sawgrass, and various grasses.

2.4 Conclusions

There were 2 vegetation monitoring plots established throughout the 1.7 acre planting area. The 2010 vegetation monitoring of the site revealed an average tree density of 248 trees/shrubs per acre. This average is below the minimum success criteria of 260 trees/shrubs per acre for year five. Even though the shrub area is not showing success the bottomland hardwood area is successful. Vegetation survival in the shrub area under the Third Street Bridge has been very limited. There is limited natural regeneration of Baccharis, Wax Myrtle, and Black Willow in this area, but very little of the planted vegetation is surviving.

NCDOT has investigated the shrub area to determine possible explanation for the limited vegetation success around Plot #2. Several factors have been noted that may contribute to limited success in this area. The shrub area is located directly underneath the bridge, which may be limiting sunlight and rainfall. Due to the bridge construction at the site and the soil type, the ground is extremely compacted. In order to successfully rip or disc the site, large equipment would have to be mobilized. Due to the location of the sites, equipment access is very limited. The site access-issue, along with the cost, makes disking and/or ripping the shrub site impractical. Soil samples were also collected from the site in July 2007. The soil sample results did not indicate any nutrient deficiencies that would be detrimental to the target species or plant growth.

It appears that severe soil compaction may be the overriding factor/explanation for the limited vegetation success in the shrub area. NCDOT proposes to discontinue monitoring the vegetation in the shrub area and proposes to address any permit deficiencies at the end of the five-year monitoring period. NCDOT proposes to discontinue monitoring the Third Street Bridge Mitigation Site.

3.0 OVERALL CONCLUSIONS/RECOMMENDATIONS

The 2010-year represents the fifth year of vegetation monitoring for the Third Street Bridge Mitigation Site. Vegetation monitoring in the hardwood and shrub areas yielded 248 trees/shrubs per acre. This average is below the minimum success criteria of 260 trees/shrubs per acre for year five. Even though the shrub area is not showing success, the bottomland hardwood area is successful having 497 trees per acre surviving. NCDOT proposes to discontinue monitoring the Third Street Bridge Mitigation Site.

APPENDIX A

PHOTO AND VEGETATION PLOT LOCATIONS, SITE PHOTOS

Third Street

Photo 1

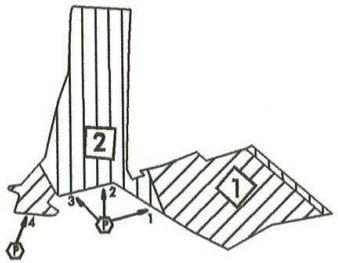
Photo 2

Photo 3

Photo 4

August 2010

3rd Street Mitigation Site



- Tree Area
- Shrub Area
- Plot Locations
- (P) Photo Locations